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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,670	06/26/2003	Songlin Xu	007898/ALRT/ETCH	8300

44182 7590 04/13/2005

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EXAMINER

VINH, LAN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 04/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,670

Applicant(s)

XU ET AL.

Examiner

Lan Vinh

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 27-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 060603.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-26 in the reply filed on 3/22/2005 is acknowledged.

Claim Rejections - 35 USC § 112

2. Claims 4-8, 14-16, 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim s 4, 14, 22 recites the limitation "the density of a free radical ". There is insufficient antecedent basis for this limitation in the claim. Claims 5-8 are indefinite because they depend on claim 4, claims 15-16 are indefinite because they depend on claim 14.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (US 6,797,634) in view of Golovato et al (6,143,144)

Suzuki discloses a method for conditioning an etching chamber. The method comprising the steps of:

injecting a probing gas/conditioning gas of O₂ and Ar into a plasma chamber (col 15, lines 35-37)

striking the probing gas/conditioning gas into a probing plasma (col 12, lines 35-40)

measuring the emission intensities of the species in the probing plasma to determine the end point of the plasma (col 15, lines 22-25) and cleaning the chamber using the conditioning gas (col 16, lines 53-56), which reads on measuring the emission intensities of the radicals in the probing plasma to determine whether to continue a plasma process on the basis of the measured emission intensities/to determine if the plasma chamber is over-seasoned/determining the extent of the plasma cleaning/process drift

Unlike the instant claimed inventions as per claims 1, 4-7, 11, 14-16, 19, 22-24, Suzuki fails to specifically disclose measuring the emission intensities of free radicals in the probing/conditioning plasma, comparing the ratio of emission intensities between the free radicals with a first and a second levels

Golovato discloses a method for etch rate enhancement comprises the steps of measuring the emission intensities of free radicals in the probing/conditioning plasma, comparing the ratio of emission intensities between the free radicals with a first and a second levels (col 11, lines 18-30)

Since Suzuki is directed to a method for conditioning an etching chamber using oxygen -containing plasma, one skilled in the art at the time the invention was made would have found it obvious to modify Suzuki method by adding the step of measuring the emission intensities of free radicals in the probing/conditioning plasma and comparing the ratio of emission intensities between the free radicals with a first and a second levels as per Golovato because Golovato discloses that the emission intensity from oxygen and argon are compared to determine the origin of the undesired activated oxygen (col 11, lines 20-25)

Regarding claims 2-3, 9-10, 12-13, 17-18, 20-21, 25-26, Suzuki discloses that the plasma includes oxygen radical as a main component and argon (col 16, lines 4-5, lines 62-64)

Regarding claim 8, Suzuki discloses the step of measuring radical and the time of the conditioning may be increased from the standard condition (col 11, lines 45-49)

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zhong et al (US 6,124,927) discloses the step of determining the end-point of a cleaning based on the emission intensities of the species (col 3, lines 15-17)

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV
April 11, 2005